114A is presented in the combined view **110**A-**110**B. The route may be depicted on the map **110**B as leading towards the location **114**B.

[0079] In some embodiments, and as will be described below, the navigation user interface **112** may optionally be removed by the user interface **102** as the vehicle is driven. For example, the combined view **110**A-**110**B may be dynamically increased in size. In this example, the combined view **110**A-**110**B may include a more detailed autonomous visualization (e.g., a driving view).

[0080] The driving view, as an example, may represent a rear upward point of view of the graphical depiction **110**A of the vehicle. As an example, the driving view may be similar to that of a camera or drone positioned a threshold distance behind and above the vehicle. A system or processor may use sensor data, such as images from image sensors, in combination with one or more machine learning models (e.g., convolutional neural networks or other computer vision techniques) to generate information for inclusion in the driving view. As an example, the machine learning models may analyze input images from image sensors positioned about the vehicle. In some implementations, the image sensors may provide a 360 degree view about the vehicle. These input images may be analyzed to classify vehicles (e.g., sedans, trucks, motorcycles), objects (hazards, potholes, speed bumps, pedestrians, stop lights, signal lights), and so on, which are depicted in the images. Optionally, the input images may be stitched together to provide a consistent view (e.g., 360 degree) view of the real-world environment in which the vehicle is located (e.g., via a machine learning model, such as a neural network). Images, or other sensor data, may be received at a particular frequency (e.g., 30 frames per second, 60 frame per second, 120 frames per second, and so on). These images may be analyzed to update the information included in the driving view.

[0081] In some embodiments, the user interface system **100** may access models associated with vehicles, objects, and so on. The user interface system **100** may then render the models in accordance with received sensor data to generate the driving view. For example, the user interface system **100** may receive information indicating a present location associated with a proximate vehicle of a particular type (e.g., a truck). In this example, the user interface system **100** may render a model of a truck in the driving view which is consistent with the present location. As may be appreciated, the position of the rendered model in the driving view may be determined using camera parameters from one or more image sensors which obtained respective images of the truck. Thus, the position of the real-world truck may be translated into a position within the driving view. Additionally, in implementations in which images are stitched together, the resulting stitching may represent a map which indicates positions, sizes (e.g., bounding boxes), and so on, of vehicles and/or objects. This map may be used, for example by the system **100** or a different system or processor, to identify a position within the driving view at which to render the truck. While the use of models is described above, in some embodiments physical characteristics of a vehicle or object may be extracted from one or more images. As an example, a system or processor may generate an appearance of a vehicle or object for rendering in the user interface **102**.

[0082] The driving view may therefore reflect a graphical representation of a real-world environment in which the vehicles is located. Graphical depictions of other vehicles may be presented as moving about the vehicle in conformance with their actual positions in the real-world environment. Additionally, road markings, signs, and so on, may be presented in the driving view. The user interface system **100** may update the user interface **102** in real-time (e.g., substantially real-time) to render the vehicles and/or objects included in the real-world environment. For example, images may be received, analyzed, and used to update the user interface **102**.

[0083] As will be described in more detail below, with respect to FIG. **2**B, the user interface system **100** may additionally update the user interface **102** to reflect navigation information. Thus, the combined view described herein may include an autonomous visualization, map information, and navigation information. For example, as the vehicle is being driving along a route, the user interface **102** may update to indicate navigation events. In this example, the user interface **102** may indicate that the user should move over one or more lanes, take a turn, and so on.

[0084] In some implementations, the vehicle may be operated in an autonomous or semi-autonomous mode. Thus, the driving view may provide insight into a view of the real-world environment as determined by a system or processor included in the vehicle. The user may view the driving view to ensure that the real-world environment is being properly interpreted. Additionally, the use of navigation information may proactively project to the user actions which the vehicle is to perform.

[0085] Thus, the user interface **102** may be dynamically updated according to a context associated with operation of the vehicle. For example, the navigation user interface **112** was presented in FIG. **1**A based on user input **104** indicating selection of navigation functionality. Thus, the combined view **110**A-**110**B was dynamically reduced in size to accommodate the navigation user interface **112**. In FIG. **1**B, the navigation user interface **112** presents directions towards the location. As described above, as the user begins driving the navigation user interface **112** may be dynamically removed. In this way, the user may focus on the combined view **110**A-**110**B which may be updated to include navigation information (e.g., upcoming navigation events).

[0086] Example Flowcharts

[0087] FIG. **2**A is a flowchart of an example process **200** for updating a unified user interface. For convenience, the process **200** will be described as being performed by a system of one or more processors (e.g., the contextual user interface system **100**).

[0088] At block **202**, the system presents a unified user interface depicting a vehicle. As illustrated in FIGS. **1**A-**1**B, the unified user interface may include an autonomous visualization (e.g., a graphical depiction of a vehicle). Additionally, the unified user interface may include map information. An extent to which the map information is zoomed in, or zoomed out, may be based on a current context associated with operation of the vehicle. For example, if the vehicle is in park the unified user interface may present a zoomed in view of the map. In this example, the graphical depiction of the vehicle may substantially fill a display presenting the unified user interface.

[0089] As another example, if the vehicle is being driven, the map information may be further zoomed out. As an